SECTION 11

OVERVIEW OF SPECIFIC REGULATED ACTIVITIES

11-1. General. This section describes common HTRW issues such as regulatory concerns, worker safety, and disposal practices that arise during the demolition of facilities.

11-2. UST Removals. Underground Storage Tank (UST) removals must comply with applicable Federal, state, and local regulations. The Federal Government has delegated the authority to regulate UST's to the states that in turn may delegate control to local governments that have more stringent regulations than the state. However, many states do not yet have EPA approved state programs and project personnel should check the most current volume of 40 CFR 282 to check the status of EPA's approval for the state UST program in which the project is located. Regulations vary by location and the responsible implementing agency (IA). Multiple agencies are often involved in different aspects of a single project. The appropriate agency approvals must be obtained for UST closures. Typically, the IA will provide regulatory and closure information to anyone closing a UST. The RE must also keep the IA informed of unforeseen contamination or other problems encountered during UST removal and closure activities. Under no circumstances should a project be stopped and contamination left in the ground without consulting with the IA.

a. References and Information. The following USACE references, in addition to the appropriate IA regulations and guidelines, provide information concerning removal and closure of UST's:

(1) RE's involved in UST projects should reference EM 1110-1-4006, "Removal of Underground Storage Tanks." This document contains USACE guidance on all phases of UST work;

(2) The HTRW lessons learned database, described in Section 13, provides lessons learned from USACE UST projects;

(3) USACE Personnel. USACE has extensive UST and drum handling experience. This experience may be found in other construction offices, the designated HTRW design district, the HTRW CX, and the OE MCX. See the list of HTRW projects/POCs in Appendix D;

(4) CEGS 01351, "Safety, Health, and Emergency Response (HTRW/UST)" and CEGS 01450, "Chemical Data Quality Control," should be used for all UST removal projects; and

(5) CEGS 02115, "Underground Storage Tank Removal," should be used for all UST removal projects.

b. Construction. Care needs to be exercised during tank excavation so that contaminated material is not mixed with clean material. Keep surface water out of excavations to avoid additional disposal costs. The RE should be familiar with all confined space safety requirements and require strict compliance with current procedures. Plan with the contractor how your partnership will react to the potential unknowns including notification requirements for leakage/spills.

c. Regulatory Concerns. When removing underground storage tanks, the following potential regulatory issues must be taken into consideration:

(1) The tank contents and any rinsate generated in the process of cleaning the tank may be hazardous waste and/or Department of Transportation (DOT) regulated hazardous material. However, any product in the tank, which can still be used for its original intended purpose, for example, fuel would not be a hazardous waste. All wastes should be characterized per 40 CFR 261 or corresponding state regulations. All shipments, whether products or waste, should be evaluated to determine whether they are DOT regulated hazardous materials;

(2) The tank, if transported offsite intact and containing residue of a hazardous material, may be subject to DOT packaging, marking, labeling, and/or placarding requirements as well as shipping papers. It may be beneficial to clean and cut up the tank not only to render it non-regulated, but also to ensure it is not put back into service at another location;

(3) Tanks exhibiting hazardous characteristics D018 - D043 may be able to take advantage of an exclusion from hazardous waste regulations found in 40 CFR 261.4(b)(10). This is a limited exclusion, however, and would not apply to tanks exhibiting an ignitability characteristic or failing TCLP for lead;

(4) Tanks constituting hazardous waste, which do not qualify for an exclusion, can be rendered non-hazardous via debris treatment standards in 40 CFR 268.45. However, treatment may be subject to permit requirements unless cleaning takes place prior to the point of generation of the waste; and

(5) Tank coatings sometimes contain regulated substances such as PCBs or asbestos. This can impact disposal requirements.

11-3. <u>Drum Removals.</u> There are a number of unique safety and environmental hazards associated with drum handling at hazardous waste sites. The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 established a national program for the cleanup of hazardous waste sites. When large numbers of buried drums are encountered, it may be cost effective to perform compatibility testing and bulk drum contents on-site. The bulk drums are subsequently shipped off-site for disposal. Information on drum handling can be

found in EPA publication EPA/600/2-86/013, "Drum Handling Practices at Hazardous Waste Sites."

11-4. Asbestos. Asbestos-containing materials (ACM) must be identified and quantified prior to renovation or demolition of any structure. ACM are defined as materials containing more than one percent (1%) asbestos. Suspect materials installed prior to 1980 must be assumed to contain asbestos unless inspected and analyzed using Asbestos Hazard Emergency Response Act (AHERA) protocol (refer to references below).

a. Types of Asbestos. ACM are divided into two broad categories: friable and non-friable. Friable is defined as ACM that can be crumbled in the hand. Friable asbestos is far more dangerous since virtually any action including wind can stir up breathable fibers. Usually all friable asbestos materials must be removed from a building prior to demolition. Friable materials must be disposed of in a landfill approved by either the state or EPA and which is in compliance with the requirements of 40 CFR 61.154 or an EPA approved site that converts asbestos-containing waste materials into non-asbestos containing materials according to 40 CFR 61.155. Materials that often contain asbestos include the following: pipe and boiler insulation; sprayed-on or troweled-on fireproofing, plaster and stucco; caulks and mastics; floor tile and linoleum; and cement asbestos (transite) pipe, sheets, and shingles. Roofing materials have relaxed requirements, but should be tested prior to disposal. Previously unidentified materials found once demolition/renovation has begun usually result in a contract modification.

b. Asbestos Surveys. If no asbestos survey exists for the building(s) to be demolished or renovated, one must be conducted by a certified asbestos inspector so that correct specifications can be developed. If a survey exists, but was done more than 3 to 4 years ago, a confirmatory inspection is required.

c. Regulations. The following paragraphs briefly describe some of the Federal regulations which pertain to ACM. Local regulations must also be checked because they may contain more stringent criteria than Federal requirements.

(1) NESHAP 40 CFR Part 61, Subpart M, requires the owner or operator of a facility to determine the presence or non-presence of ACM prior to conducting renovation or demolition activities. It also specifies requirements for the handling, shipping and disposal of regulated ACM.

(2) OSHA standard 29 CFR 1926.1101 pertains to asbestos exposure in construction, renovation, and building maintenance work places. Building owners are required to notify employees, tenants, and prospective employers (e.g., bidding contractors) of the descriptions, locations, and quantities of ACM at their facilities.

(3) The AHERA contains rules and regulations (40 CFR Part 763) addressing issues of identifying, evaluating, and controlling asbestos containing materials in schools. The AHERA

inspections must be conducted by certified individuals using specific guidelines which include analysis of a minimum number of samples per material type to prove that a suspect material does not contain asbestos. The majority of requirements found in 40 CFR Part 763 do not apply to work being conducted at non-school structures. The requirements of the Model Accreditation Plan (MAP) found in Appendix C to Subpart E of 40 CFR 763 apply to work done in public or commercial buildings as well as to work done in schools.

d. Quality Assurance Personnel Responsibilities for Asbestos Abatement. It is USACE construction policy that construction QA personnel enter the asbestos abatement areas and fully QA the work performed. Two USACE documents, the newly revised CEGS 13280, "Asbestos Abatement" and EP 1110-1-11, "Asbestos Abatement Guideline Detail Sheets," provide comprehensive guidance for asbestos abatement activities. The CEGS requires that, upon completion of the final cleaning, the contractor and the USACE authorized representative conduct a visual inspection of the cleaned area and document the results of the final cleaning and visual inspection as specified in the Setup Detail Sheet 19. Training is required before a person enters an area where regulated asbestos abatement activities are taking place. Refer to paragraph 5-4 for training requirements. In addition, requirements for medical surveillance, personnel protective equipment, respirators, and heat stress prevention must be observed. EP 1110-1-11 complements the guide specification and contains detail sheets pertaining to the asbestos abatement process.

11-5. <u>Lead-Based Paint (LBP).</u> LBP should be identified prior to renovation or demolition primarily for worker protection. Buildings that were built prior to 1978 are particularly suspect. LBP is defined by the EPA and Housing and Urban Development (HUD) at ≥0.5 percent by weight or ≥1.0 mg/cm^2 by area. Paint should be sampled and tested prior to renovation or demolition, either with a direct-reading instrument (X-ray fluorescence) or by lab analysis of a bulk sample.

a. LBP Removal. Generally, LBP need not be removed prior to demolition of a structure. If the paint is peeling or flaking, it may require removal for worker protection. However, there is no environmental regulatory requirement (EPA or TSCA) for paint removal prior to demolition. The decision to remove LBP prior to demolition should be carefully considered, as the unnecessary removal of LBP prior to demolition can be costly. If the decision to remove LBP prior to demolition is made, it can be done by either pressure washing and wet scraping to remove the paint that is not intact, or by spraying the structure with an encapsulate. LBP becomes particularly hazardous whenever heated, sanded, or abraded. Coated items should be stripped before applying heat, such as in cutting and soldering. Debris containing intact paint can currently be disposed of as general construction debris. On 18 December 1998, EPA proposed new regulations for the management and disposal of LBP debris. Final regulations were not available at the time of the finalization of this guide; therefore, project personnel should check with an environmental regulatory specialist prior to disposal of LBP debris to ensure current regulatory requirements are being met. Paint that is removed by pressure washing or

scraping could potentially be classified as a RCRA hazardous waste. Proper waste characterization should be conducted prior to the disposal of paint related wastes. Soils that have been contaminated from peeling lead-based paint should be handled according to HUD guidelines for housing and EPA guidelines for non-housing projects.

b. Worker Safety. Generally, workers not exposed to lead paint demolition debris for more than 30 days annually require only LBP orientation. A contractor specializing in demolition (greater than 30 days/year) will likely need to have workers trained in lead hazards and placed in a medical surveillance program. LBP abatement should be done only by contractors who are properly trained and certified.

c. Regulations. The following paragraphs briefly describe some of the Federal regulations that pertain to LBP.

(1) The OSHA Lead Exposure in Construction Standard, 29 CFR 1926.62, applies to employers of persons potentially exposed to lead from construction operations. Where the lead exposure resultant from a given work activity is not known, the use of personal protective equipment and engineered controls, coupled with exposure monitoring are generally required until the exposure level is established. OSHA has stated that any detectable concentration of lead may trigger certain provisions of 29 CFR 1926.62.

(2) HUD ACCN-5646, (1990; Rev May 1991) Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing may also apply when LBP is present during demolition activities.

(3) Toxic Substances Control Act Regulations, 40 CFR 745, Lead-Based Paint Poisoning Prevention in Certain Residential Structures. These regulations contain training and certification requirements for LBP abatement activities in target housing and child-occupied facilities.

(4) RCRA regulations for the Identification and Listing of Hazardous Wastes (40 CFR 261) and Standards Applicable to Generators of Hazardous Waste (40 CFR 262). These regulations contain requirements for generators of waste to determine whether or not the waste is a RCRA hazardous waste and establish required disposal requirements.

11-6. Bird, Bat, and Rodent Droppings. Bird, bat, and rodent droppings accumulate in and on structures and machinery, creating an environment favorable to the development of disease organisms. Infections from droppings typically occur by inhaling the pathogenic spores. Droppings are most dangerous when they are dry and subject to becoming airborne as a fine dust, such as when disturbed by sweeping or scraping.

a. Safety. Demolition of buildings containing droppings may cause pathogens to become airborne in the breathing zone. When entering a building where excessive droppings have accumulated, disposable shoe covers and protective gloves should be worn. Hands should be

washed thoroughly after removal of the gloves. U. S. Army Environmental Hygiene Agency, TG 142, Managing Health Hazards Associated With Bird and Bat Excrement provides additional information on applicable safety procedures when dealing with droppings.

b. Cleanup. Safe cleanup of droppings is based on protection from spore inhalation and minimization of spore dispersal. Although droppings are usually easier to remove when they are dry, saturating them with water prior to removal is recommended to prevent the debris and any pathogens from becoming airborne. This should be done with a low-velocity mist spray. Using high pressure and/or a concentrated stream may scatter the droppings before they can be adequately wetted. A portable, hand pressurized sprayer is satisfactory for applying limited amounts of water. A vacuum with a high efficiency particulate air (HEPA) filter can be used to pick up the accumulated debris. Disposal can be accomplished in a Class III landfill.

11-7. Incidental Radioactive Sources. The following paragraphs provide examples of incidental radioactive sources that may be encountered during demolition activities. Regulatory requirements for protection, monitoring, storage, and disposal of incidental radioactive sources are described in 10 CFR 20, “Standards for Protection Against Radiation.”

a. Gauges and Instruments. The military used radium in gauges and instruments in vehicles and aircraft. Radium was also occasionally used in compasses and radar devices. Residue can be found in instrument shops and motor pools. Gauges typically contained between 1 and 15 microcuries of radium-226 per device. The average dose rate on contact with a radium gauge may range from 50 microR/hr to 2 milliR/hour. The exposure to a worker's extremity (such as the hand) cannot exceed 50,000 millirem/year (assume 1 millirem = 1 milliR).

b. Smoke Detectors. Many smoke detectors use a radioactive element to screen for smoke. If crushed or disposed of improperly, these smoke detectors can release dangerous amounts of contamination. Disposal should be in accordance with the manufacturer’s recommendations.

11-8. Mercury. Mercury may be encountered during building demolition and may require special handling and disposal. Mercury is commonly found in fluorescent light tubes, thermostats, circuit boards, rectifiers, manometers, thermometers, and batteries. It is also likely to be found wherever mercury has been routinely used such as in dental clinics using mercury amalgams or in laboratories. Mercury is found in laboratories not only in equipment, but also as a result of analysis. For example, a mercury compound is used in some test methods for analyzing phosphorous and total kjeldahl nitrogen.

a. Regulations. Mercury is one of the hazardous constituents on the toxicity characteristic leaching procedure (TCLP) table, 40 CFR 261.24, which may cause a waste to exhibit a hazardous characteristic. Therefore, mercury-containing wastes are potentially subject to requirements for generators of hazardous waste (40 CFR 262) and land disposal restriction

treatment requirements (40 CFR 268). Mercury containing hazardous wastes have different treatment requirements depending upon whether it is classified as high concentration or low concentration mercury.

b. Regulatory Exceptions. Some mercury containing wastes may be excluded from hazardous waste regulation. 40 CFR 261.9 allows mercury thermostats and fluorescent light tubes to be managed as "universal waste" in accordance with regulations in 40 CFR 273. Many states have adopted similar requirements. Through the universal waste program, they can be collected and recycled in lieu of being managed as hazardous waste. Certain batteries may also be managed as universal waste rather than hazardous wastes as stipulated by the Mercury-Containing and Rechargeable Battery Management Act, Public Law 104-142.

11-9. Lighting Fixtures. Spent fluorescent light tubes and high intensity discharge (HID) lamps contain mercury which, when disposed in a municipal landfill, can leach into the soil and ground water. Spent fluorescent light tubes can be recycled, allowing for the recovery of the mercury, glass, and aluminum end caps. These lighting fixtures must be managed in one of two ways. Either they must be managed as a RCRA hazardous waste or as Universal Waste as per 40 CFR 273. 40 CFR 273 provides alternative management provisions using the more stringent RCRA generator provisions. In order to utilize the provisions in 40 CFR 273, the applicable state agency must adopt similar regulations within the generator's state as well as the disposal state. Light ballasts may also contain PCBs that can pose potential problems when good disposal practices are not used. See paragraph 11-10 for additional information on PCBs in light ballasts.

11-10. PCBs. Polychlorinated biphenyl containing wastes may be encountered during building demolition and may require special handling and disposal. PCB dielectric fluid is commonly found in electrical equipment manufactured prior to 2 July 1979 including transformers, light ballasts, large and small capacitors, circuit breakers, reclosers, voltage regulators, switches, oil-filled cable, and electromagnets. It has also been found in other areas such as in household and industrial appliances, motors, and hydraulic equipment. PCBs were also widely found in manufactured products. EPA has termed these as "PCB bulk product waste." They are PCBs in solids including but not limited to applied dried paints, sealants, caulking, adhesives, coal tar coatings on underground tanks, plastic insulation from wire or cable, furniture laminates, sound deadening or other types of insulation, and potting material within fluorescent light ballasts.

a. Restrictions on Storage. Once removed from service for disposal, PCB containing wastes must be disposed of within one year. During this time, storage is limited to only 30 days unless conforming storage is provided. See 40 CFR 761.65 for requirements.

b. Disposal Options. In lieu of disposal, PCB contaminated metal may be recycled by sending it to a scrap metal recovery oven or smelter after all free-flowing PCBs have been removed. Conditions and requirements for scrap metal recovery are specified in 40 CFR 761.72. Flushing to remove high concentration PCBs prior to recovery may be required.

(1) Disposal of PCBs is contingent primarily on concentration and leachability of the PCBs. High concentration liquids, greater than or equal to 500 ppm PCBs must be incinerated. Lower concentration PCBs liquids, greater than 50 ppm but less than 500 ppm PCB, can be incinerated or burned in a high efficiency boiler. PCBs in oil at or above 2 ppm, but less than 50 ppm PCBs can be burned as off-specification used oil in an off-specification used oil boiler or industrial furnace.

(2) Chemical waste landfills, which are TSCA approved landfills, can be used to dispose of solids such as drained equipment. Equipment formerly containing high concentrations of PCBs must usually be flushed to remove excess PCBs prior to being placed in the landfill. Equipment formerly containing lower concentrations of PCBs (less than 500 ppm) can typically be landfilled directly after draining in accordance with regulations in 40 CFR 761.60.

(3) Municipal solid waste landfills can be used to dispose of small, non-leaking capacitors (those containing less than three pounds of PCBs); drained PCB contaminated equipment formerly containing less than 500 ppm PCB; and PCB bulk product wastes (dried applied paints, sealants, caulking, adhesives, etc.). However, prior to disposing of PCB bulk product waste at a solid waste landfill, written notice must be provided to the landfill a minimum of 15 days prior to the first shipment of waste. Depending upon the type of PCB bulk product waste being disposed of, it may also be necessary to establish the leachability of the bulk product waste because leachable wastes must be segregated from organic liquids in the landfill and the landfill must be monitored for PCBs.

11-11. Lead in Firing Ranges. Facilities that are, or previously were, used as indoor firing ranges pose a particular problem due to lead contamination. These facilities must be cleaned prior to being used for something other than a firing range. Soil or sand that contains spent ammunition could potentially be classified as a RCRA hazardous waste. Proper waste characterization should be performed prior to disposal of firing range sands or soils. Surfaces of the facility must be cleaned and sealed with paint or wax prior to reuse for purposes other than as a firing range. Cleaning and sealing is not required for demolition.

11-12. Bioaerosols. Disturbance of air handling systems may cause the release of bioaerosols. Bioaerosols include viruses, bacteria, fungi, molds, algae, and protozoa and their products. Some bioaerosols cause infectious disease, and others produce toxins which may act as sensitizing agents in allergic persons. The ideal breeding ground for bacterial molds and fungi is an enclosed, dark, humid, controlled environment. Highly allergic individuals may react to extremely small concentrations.